APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,201	04/24/2001	Cheung Auyeung	VWE-001-1	5410

22888 7590 04/21/2004		EXAMINER
BEVER HOFFMAN & HARMS, LLP		BUGG, GEORGE A
TRI-VALLEY OFFICE		

ART UNIT	PAPER NUMBER
2613	

1432 CONCANNON BLVD., BLDG. G
LIVERMORE, CA 94550

DATE MAILED: 04/21/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/04/2004 has been entered.

Claim Objections

2.   Claim 1 is objected to because of the following informalities: The limitations of claim 1 refer to a process for determining a first and second motion vector with respect to a predetermined pattern of pixel, which seems to be used for both the first motion vector and the second motion vector. However Applicant's Specification, pages 11-14, discloses multiple embodiments wherein each of a first and second motion vector are produced using a different predetermined pattern of pixels for each computation respectively. Appropriate correction is required.

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-3, 5-8, and 10-19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over US Patent No. 5,576,772 to Kondo.

5.   As for claim 1, Applicant claims, **"selecting a predetermined pattern of pixels**

in the previous image", Kondo discloses in column 6, lines 45-49, a predetermined

search range of the reference frame, wherein the reference frame is a previous frame,

and contains a specific pattern of pixels. Applicant further claims **"computing a first**

macro-block difference measure for each of a first plurality of pixel blocks in the

previous image to form a plurality of first macro-block difference measures for

the first macro-block using the predetermined pattern of pixels", further disclosed

in column 6, lines 60-64, Kondo states that a motion vector is obtained by evaluating

4x4 blocks of pixels in relation to the predetermined search area (i.e. predetermined

pattern of pixels) to obtain a motion vector by performing a coarse search, and Figure

9A, as well as, column 8, lines 27-53, disclose the process for taking the difference

between a base block (reference block or previous block) and an inspection block or

search area. Claim 1 additionally requires **"selecting a first origin block from the**

first plurality of pixel blocks having a lowest first macro-block difference

measure; computing the first motion vector using the first origin block and the

first macro-block", Kondo disclose in column 8, lines 54-57, disclose that the values of

delta x and delta y correspond to the position of the minimum evaluating value (i.e.

lowest first macro-block difference measure) in relation to the inspection block, and

comprise the motion vector obtained by the third stage. Kondo also discloses in column

4, lines 5-7, and 25-27, that the origin of the block matching process is moved to the

position which corresponds to the minimum evaluating value. Although Kondo does not

recite the specifics of computing the motion vector, it is the contention of the Examiner

that the selected origin block is equivalent to the block, which contains the minimum

evaluating value, and that the motion vector obtained in the third stage of the Kondo

reference, is computed by using the origin block and the inspection block, or first macro-

block. Claim 1 further requires **"computing a second macro-block difference**

measure for each of a second plurality of pixel blocks in the previous image to

form a plurality of second macro-block difference measures for the second

macro-block using the predetermined pattern of pixels". Column 9, lines 15-38,

describe the differencing process, between the base block (reference block or previous

block) and an inspection block or search area, which has been shown to have a

predetermined pattern of pixels. Lastly, Applicant claims **"selecting a second origin**

block from the second plurality of pixel blocks having a lowest second macro-

block difference measure; and computing the second motion vector using the

second origin block and the second macro-block. As disclosed by Kondo in column

9, lines 39-43, disclose that the values of delta x and delta y correspond to the position

of the minimum evaluating value (i.e. lowest second macro-block difference measure) in

relation to the inspection block, and comprise the motion vector obtained by the third

stage. Although Kondo does not recite the specifics of computing the second motion vector, it is the contention of the Examiner that the selected origin block is equivalent to the block, which contains the minimum evaluating value, and that the motion vector obtained in the second stage of the Kondo reference, is computed by using the second origin block and the inspection block, or second macro-block. Therefore it would have been obvious to one of ordinary skill in the art to utilize the invention of Kondo to obtain an accurate motion vector while reducing processing operations.

6.   With respect to claims 2 and 3, column 4, lines 1-4, lines 14-23, as well as column 16, lines 16-29, show that the invention of Kondo can employ a thinning process, and that pixels can be reduced to one half or one quarter of previous image, as shown in Figures 9A through 9C.

7.   As for claims 5 and 6, Kondo shows in column 9, lines 43-55, summing the absolute difference values on a pixel-by-pixel bases between the base block and the inspection block, as well a summation of squared difference values, may be utilized.

8.   With respect to claims 7, 13, and 14, the added limitations, in addition to those limitations of claim 1, which are rejected above, involve using a sub-pattern of pixels selected from the predetermined pattern of pixels, for taking difference measures, are shown Figures 9A-9C, wherein Kondo uses sub-patterns of pixels in the first and second hierarchical stages of his invention.

9.   As for claims 8 and 10, column 4, lines 1-4, lines 14-23, as well as column 16, lines 16-29, show that the invention of Kondo can employ a thinning process, and that

pixels can be reduced to one half or one quarter of previous image, as shown in Figures 9A through 9C.

10.   As for claims 11 and 12, Kondo shows in column 9, lines 43-55, summing the absolute difference values on a pixel-by-pixel bases between the base block and the inspection block, as well a summation of squared difference values, may be utilized.

11.   With respect to claims 15-19, the use of processors, comparators, buffers, and caches for the purpose of performing differencing, storing, and comparison of pixel data are well-known functions and components of motion vector calculation schemes and apparatuses. (Official Notice)

Allowable Subject Matter

12.   Claims 4 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George A Bugg whose telephone number is (703) 305-2329. The examiner can normally be reached on Monday-Thursday 9:00-6:30, and every other Friday.
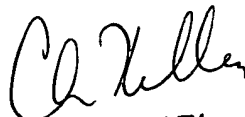
If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Christopher S Kelley can be reached on (703) 305-4856. The fax phone

number for the organization where this application or proceeding is assigned is 703-

872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

George A Bugg
Examiner
Art Unit 2613

GAB

April 8, 2004

CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600